REMARKS

Claims 1-16 are pending in the application. Claims 8-10 stand rejected under 35 U.S.C. 112, sixth paragraph. Claims 5 and 12 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Claims 1-16 stand rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Claims 1-5, 8-12 and 15-16 stand rejected under 35 U.S.C. 102(e) over Brenner (US Patent No. 6,658,449). Claims 6-7 and 13-14 stand rejected under 35 U.S.C. 103(a) over Brenner. Applicant respectfully traverses these rejections as described below in detail.

Claims 8-10 have been amended to replace means-plus-function language with non-means language. In particular, the means-plus-function language relating to polling means, comparison means, and allocation means has been replaced, and the claims now recite that a scheduling computer is used to perform the polling, comparison, and allocation. Support for these amendments can be found, e.g., in Paragraphs [0012]-[0017] and [0025]-[0028] of the Applicant's specification. Because the Examiner's rejections regarding the mean-plus-function language are now moot, Applicant respectfully submits that the rejections must be withdrawn.

With respect to the rejection of claims 5 and 12 under § 112, second paragraph, Applicant has deleted the phrase referring to a perceptible change in response time. The claims have been amended to recite that the predetermined time delay does not exceed 1000 milliseconds. No new matter has been added. The claims particularly point out and distinctly claim the presently claimed invention. Thus, Applicant requests that the §112, second paragraph, rejection also be withdrawn.

The Examiner has rejected the claims on the grounds that they are directed to non-statutory subject matter. Applicant respectfully disagrees with the Examiner's § 101 rejection for the following reasons.

The Examiner has asserted that the claims do not meet the requirements of the Supreme Court's machine-or-transformation test. Applicant specifically traverses this ground of rejection. The Examiner acknowledges that a method may qualify as a 35 U.S.C. § 101 process when the process either (1) was tied to a particular machine, or (2) operated to change materials to a

different state. *See* <u>In re Bilski</u>, 545 F.3d 943 (Fed. Cir. 2008). Applicant believes that the present claims meet not only one, but both of these prongs.

The present invention is directed to scheduling a transaction on a CPU. Increasing the efficiency of CPU utilization clearly possesses a real world value. The claimed scheduling methods are practical and useful in that they provide a method for improving the performance of transaction processing systems by delaying the processing of a certain transaction. *See* Paragraph [0032]. The processing of transactions are generally bound to the same CPU. *See* Paragraph [0003]. Because operating systems cannot schedule a process to execute on a CPU when a previous process is not executing for a given reason, users perceive performance degradation. *See* Paragraphs [0004] and [0011].

Because the claims recite systems and methods of operating at least one central processing unit (CPU), which is a concrete device, Applicant believes that the claimed subject matter falls within one of the four statutory categories of invention. Furthermore, the invention is not an abstract idea, law of nature or natural phenomenon. In addition, the presently claimed invention results in the efficient CPU usage based on its current load. *See e.g.* Paragraphs [0037] and [0043]. The allocation of a transaction or process on a CPU versus the determination to delay such a transaction corresponds to the current load on the CPU. As such, the method claims operate to change the current load of a CPU to a different state, a predetermined time delay in the execution of a transaction. Because the invention is a statutory process under 35 U.S.C. § 101, Applicant respectfully requests that this rejection be withdrawn.

Nevertheless, claim 1 has been amended to clarify that the method claim is also tied to a particular machine. In particular, the following phrase has been added: "wherein said polling, allocating, and delaying steps are performed on at least one particular machine, said at least one particular machine comprising at least one physical computing device." Support for the amendment can be found, e.g., in Paragraphs [0039], [0042] and [0043], and Figure 1. A claimed process is patent-eligible under 35 U.S.C. 101, *inter alia*, if it is tied to a particular machine or apparatus. <u>In re Bilski</u>, 545 F.3d 943 (Fed. Cir. 2008). *See also* <u>Parker v. Flook</u>, 437 U.S. 584, 593 (1978) ("the Court has … recognized a process as within the statutory definition when .. was tied to a particular apparatus".) A "particular machine" may comprise one or more

physical computing devices which perform a method. *See, e.g.* <u>Ex parte Wasynczuk</u>, 87 USPQ2d 1826, 2008 WL 2262377, BPAI Opinion 2008-1496 at 22 (BPAI 2008) (holding that a first simulating step is performed on "a first physical computing device" and a second simulating step performed on "a second physical computing device" is a "a particular apparatus" to which the process is tied). Furthermore, the particular machine imposes meaningful limits on the scope of the method claim because it includes significant activity, such as: periodically polling at defined time intervals to determine the current load, continuously comparing the current load to a predetermined threshold, and allocating a transaction to a CPU. Because the amended claims are clearly tied to a particular machine in a meaningful way, the §101 rejection should be withdrawn.

Claim 8 has been amended to clarify structure positively claimed in the present invention. In particular, the limitation of a scheduling computer has been introduced in the body of the claim, as requested the Examiner. As explained above, the claim is also directed to a CPU. As such, the claim recite physical "things" and may be interpreted as directed to a machine. Accordingly, Applicant respectfully submits that the rejections must be withdrawn.

Claim 15 has been amended to reflect the implementation of the claimed method via an additional step. As with other transactions and processes which are loaded and executed on CPU, the presently claimed method may be provided to a computing system in order to be executed so that it may perform the claimed steps of polling, allocating, and delaying. Support for the amendment can be found, e.g., in Paragraphs [0008], [0042] and [0043], and Figure 1. Applicant does not disclaim the embodim ent of a computer program to implement the claimed method. Rather, the amendment clarifies that the implementation of the method may be provided via transactions targeted to a computing system. Because claim 15 depends from claim 1, which has patentable subject matter as explained above, claim 15 is also patentable. Indeed, claim 15 has the necessary physical components required for execution by way of a CPU and is tied to a particular machine. Thus, Applicant respectfully requests that the 101 rejection be withdrawn.

Claim 16 has been amended to clarify that computer readable medium may provide executable instructions in order to be loaded and to implement the claimed steps of polling, allocating, and delaying. "It has been the practice for a number of years that a "Beauregard

Claim" of this nature be considered statutory at the USPTO as a product claim." *See* <u>Ex parte Bo Li</u> at page 9 (Appeal 2008-1213, Application 10/463,287 November 6, 2008). In the <u>Beauregard</u> order, the Federal Circuit upheld such computer-readable media claims. <u>In re Beauregard</u>, 53 F.3d 1583, 1584 (Fed. Cir. 1995). "[T]his practice is not inconsistent with In re Nuijten." <u>Ex parte Bo Li</u> at page 9. Consequentially, the §101 rejection against claim 16 should be withdrawn. Furthermore, the computer readable medium provides a meaningful limit on the scope of the method claim because it includes the significant activity of providing instructions in order to implement the claimed steps of polling, comparing, and allocating on a particular machine. As such, the §101 rejection should be withdrawn.

With regards to the §102 and §103 rejections, Applicant believes that Brenner fails to teach or suggest structure positively recited and claimed in Applicant's independent claims. Brenner fails to disclose a current *load* on a CPU, much less polling a CPU to determine its current load or allocating a transaction request to the CPU if its load is below a threshold. As set forth in Applicant's specification, the number of requests made by multiple users within a given unit of time is generally referred to as the load. *See* Paragraph [0037]. Instead of describing such loads, Brenner is directed to load balancing, which relates to keeping various "run queues" equally utilized. *See* Column 4, lines 29-31. "The run queue maintains the priority information of the highest waiting thread," and "[t]he dispatcher uses this priority information to make decisions of which run queue to search for the next thread to dispatch." *See* Column 3, lines 40-45. As such, Brenner's load balancing relates to the length of time that a thread has been waiting in a run queue. According to Brenner, the dispatcher scans the system to find threads that have been pending or waiting on a local run queue for greater than a threshold time amount. *See* Column 8, lines 13-16. In contrast, the presently claimed invention polls a CPU to determine a load that is based on the number of transaction requests made by users within a given unit of time, not the time period that a thread has been waiting. Therefore, the claims are distinguished from Brenner.

Furthermore, Brenner fails to teach or suggest allocating a transaction request to the CPU if its load is below a threshold. The Examiner refers to prior art cited in Brenner; however, this art is believed to be the same prior art that Applicant cites and distinguishes. Brenner describes run queues that dispatch the next thread from a queue in turn, *see* Column 1 lines 28-32; and

Applicant describes transactions that are immediately assigned in turn. *See* Paragraph [0038]. The presently claimed invention, however, recites allocating a transaction to a CPU if the current load is below a predetermined threshold. "In an embodiment of the present invention, rather than immediately assigning an incoming transaction to a CPU, the incoming transaction is held for a predetermined period of time, to determine whether a CPU will become free within the predetermined period of time." *Id*. Applicant's specification clearly distinguishes the claimed invention from such prior art.

The claims further recite that if the current load is above the predetermined threshold, the execution of the transaction request is delayed for a predetermined time delay. Brenner also fails to disclose such a predetermined time delay. The Examiner states that transactions are delayed in a bottlenecked queue, but such a delay certainly cannot be predetermined. Furthermore, Brenner fails to teach or suggest a predetermined threshold. As with the current CPU loads, the predetermined threshold also relates to the number of transaction requests made on a CPU by users within a given unit of time, and not the time period that a thread has been waiting. Moreover, Brenner fails to disclose allocating a transaction request to a CPU. Brenner's load balancing invention merely re-queuing threads.

Load balancing, according to Brenner, may be viewed as four parts: initial load balancing, idle load balancing, periodic load balancing, and starvation load balancing. *See* Column 4, lines 31-36. In Initial Load Balancing, a new threads are assigned to a run queues. Idle load balancing addresses how to shift threads from one run queue to another. Similarly, periodic load balancing addresses how to shift threads from the heaviest loaded run queue to the lightest loaded run queue. Starvation load balancing addresses how to requeue threads that are being starved of processor processing time. *See* Column 1, lines 57-65. As such, each part of Brenner's load balancing relates to moving or assigning a thread to a run queue. In contrast, the present invention relates to allocating a transaction to a particular CPU, not a run queue. Therefore, the claims are distinguished from Brenner.

The Court of Appeals for the Federal Circuit has consistently held that "Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim." Lindemann Maschinenfabirk Gmbh v. American

Hoist & Derrick, 221 USPQ 481, 485 (Fed. Cir. 1984). In addition, it is well established that, in order to show obviousness, all limitations must be taught by the prior art. In Re Royka, 180 U.S.P.Q. 580, 490 F.2d 981 (CCPA 1974); MPEP § 2143.03. It is error to ignore specific limitations distinguishing over the references. In Re Boe, 184 U.S.P.Q. 38, 505 F.2d 1297 (CCPA 1974); In Re Saether, 181 U.S.P.Q. 36, 492 F.2d 849 (CCPA 1974); In Re Glass, 176 U.S.P.Q. 489, 472 F.2d 1388 (CCPA 1973). Furthermore, the Court of Appeals for the Federal Circuit has consistently held that where a claim is dependent upon a valid independent claim, the dependent claim is *a fortiori* valid because it contains all the limitations of the independent claim plus further limitations. *See, e.g.*, Hartness Intern. Inc. v. Simplimatic Engineering Co., 819 F.2d 1100, 1108 (Fed. Cir. 1987). The cited references clearly fails to teach or suggest structure positively recited and claimed in Applicant's independent claims and their dependant claims. Thus, Applicant's invention is patentable over these references, and the rejections thereover should be withdrawn.

Conclusion

Having responded to all objections and rejections set forth in the outstanding Office Action, it is submitted that the claims are in condition for allowance and Notice to that effect is respectfully solicited. Additional characteristics or arguments may exist that distinguish the claims over the references cited by the Examiner, and Applicant respectfully preserves the right to present these in the future, should they be necessary. In the event that the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, the Examiner is courteously requested to contact Applicant's undersigned representative. In the event an extension of time is required hereunder, applicant respectfully requests that such extension be granted.

The Commissioner is authorized to charge any additional fees associated with this filing, or credit any overpayment, to Deposit Account No. 19-3790. If an extension of time is required, this should be considered a petition therefor.

Respectfully submitted,

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